CLAIMS

1. A filter for filtering signals in a telecommunications system and for impedance matching to a predetermined complex impedance, wherein the filter has at least one first pass band, and wherein the filter is passive, and the characteristic impedance of the filter is complex so that it matches the predetermined complex impedance at least approximately.

2. A filter according to Claim 1, wherein a resistance of at least one of the filter components assists in giving the characteristic impedance of the filter its complex character.

3. A filter according to Claim 2, wherein at least one resistance is in series with at least one inductance, said resistance and said inductance assisting in giving the filter said complex characteristic impedance.

4. A filter according to Claim 3, wherein the filter includes at least one parallel combination of a first inductance in series with a first resistance and a second inductance in series with a second, wherein said first inductance is large in relation to the second inductance, and wherein the first resistance is small in relation to the second resistance.

5. A filter according to Claim 4, wherein the filter includes at least two circuit of which at least one circuit segment includes said parallel combination.

6. A filter according to Claim 5, wherein the circuit segments are four structure-wise identical circuit segments.

7. A filter according to Claim 3, wherein the filter includes at least one series combination of a first

inductance in series with a first resistance and a second inductance in parallel with a second resistance, wherein the first inductance is small in relation to the second inductance, and wherein the first resistance is small in relation to the second resistance.

8. A filter according to Claim 2, wherein the filter includes at least two cascade-coupled circuit segments of which at least one circuit segment includes at least the one resistance that assists in giving the characteristic impedance of said filter said complex character.

9. A filter according to Claim 2, wherein the resistance that assists in giving the characteristic impedance of the filter said complex character is comprised of at least one resistor.

10. A filter according to Claim 2, wherein the resistance that assists in giving the characteristic impedance of the filter said complex character is comprised of at least one winding resistance of an inductor.

11. A filter according to Claim 1, wherein the predetermined complex impedance is the characteristic impedance of a transmission line.

12. A filter according to Claim 1, wherein the predetermined complex impedance is the ETSI impedance Z_{ETSI} = 150nF//750 Ω + 270 Ω.

13. A filter according to Claim 1, wherein the filter includes at least one cable simulator section, which cable simulator section has a characteristic impedance that matches the predetermined complex impedance at least approximately; wherein the filter also includes at least one capacitor, wherein said capacitor assists in giving the filter at least one attenuation peak in a predetermined frequency range in coaction with said cable simulator section.

14. A filter according to Claim 1, wherein the filter includes at least one cable simulator section, which cable simulator section has a characteristic impedance that matches the predetermined complex impedance at least approximately; and in that the filter includes at least one coupled coil, which coupled coil includes an inductance in the cable simulator section and assists in giving the filter at least one attenuation peak in a predetermined frequency range.

15. A filter according to Claim 1, wherein the filter is a low-pass filter.

16. A filter according to Claim 1, wherein the filter includes a further pass band in a predetermined frequency range, said further pass band differing from said at least first pass band.

17. A splitter filter which includes at least one filter according to Claim 1.

18. A splitter filter according to Claim 17, wherein said filter according to Claim 1 is a low-pass filter; and wherein the low-pass filter is connected in series to a high-pass filter.

19. A method of designing a filter which is intended for filtering signals in a telecommunications system and for impedance matching to a predetermined complex impedance, said method comprising the steps of

- selecting the complex impedance to which the characteristic impedance of the filter shall be matched; and
- providing the filter with at least one first pass band,
- designing a cable simulator section whose characteristic impedance matches the predetermined complex impedance at least approximately, and
- creating the filter from the cable simulator section by adapting said cable simulator section so that it will

include at least one attenuation peak in a predetermined frequency range,

and wherein solely passive components are used in the method.

20. A method according to Claim 19, wherein a capacitor which is connected to the cable simulator section assists in creating said at least one attenuation peak.

21. A method according to Claim 19, wherein an inductance is implemented in the cable simulator section with a coupled coil which assists in creating said at least one attenuation peak.

22. A method according to Claim 19, wherein the filter is provided with at least one resistance in series with at least one inductance, said resistance and inductance assisting in giving the filter said complex characteristic impedance.

23. A method for designing a filter intended for filter signals in a telecommunications system and for impedance matching to a predetermined complex impedance, in which method the filter is provided with at least one first pass band, wherein only passive components are used in the method, and wherein the method includes the further step of introducing into the filter at least one resistance which assists in giving the filter a complex characteristic impedance that matches the predetermined complex impedance at least approximately.

24. A method according to Claim 23, wherein at least the one resistance is in series with at least one inductance, wherein said resistance and said inductance assist in giving the filter said complex characteristic impedance.

25. A method according to Claim 23, wherein the resistance that assists in giving the filter its said complex characteristic impedance is implemented with the aid of at least one resistor.

26. A method according to Claim 23, wherein the resistance which assists in giving the filter its said complex characteristic impedance is implemented with the aid of at least one winding resistance of an inductance.

27. A method according to Claim 23, wherein the filter is provided with at least one parallel combination of a first inductance in series with a first resistance and a second inductance in series with a second resistance, said first inductance being large in relation to the second inductance and said first resistance being small in relation to the second resistance.

28. A method according to Claim 27, wherein the filter is comprised of at least two circuit segments, of which at least one circuit segment includes said parallel combination.

29. A method according to Claim 28, wherein the circuit segments are four circuit segments that are structure-wise identical.

30. A method according to Claim 23, wherein the filter is provided with at least one series combination of a first inductance in series with a first resistance, and a second inductance in parallel with a second resistance, wherein the first inductance is small in relation to the second inductance, and wherein the first resistance is small in relation to the second resistance.

31. A method according to Claim 23, wherein the filter is a low-pass filter.

32. A method according Claim 23, wherein the predetermined complex impedance is the characteristic impedance of a transmission line.

33. A method according to Claim 23, wherein the predetermined complex impedance is the ETSI impedance Z_{ETSI} = 150nF//750 Ω + 270 Ω.

34. A method according to Claim 23, wherein the method also includes the step of optimising the element values of the filter components on the basis of requirements placed on the properties of said filter.

35. A method according to Claim 34, wherein the method also includes an iteration procedure, in which the step of optimising said element values is repeated until the set requirements are fulfilled, and in which a circuit segment is added to and cascade-coupled with the earlier filter design with each iteration.

36. A method according to Claim 35, wherein the method includes a step of establishing a least number of circuit segments with which the set requirements can be fulfilled; and in that a filter having said least number of circuit segments is used in the optimising step at the beginning of the iteration procedure.

37. A method according to Claim 23, wherein the filter is provided with a further pass band in a predetermined frequency range, said further pass band differing from said at least one first pass band.

38. A method of designing a splitter filter that includes a high-pass filter and a low-pass filter, wherein at least one of the filters is designed in accordance with a method according Claim 23.

39. A method according to Claim 38, wherein at least one of the filters designed in accordance with Claim 23 is a low-

pass filter; and wherein the low-pass filter is connected to the high-pass filter in series.